PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of BEACH Application No. 10/743,959 Filed: 12/22/2003 For: A METHOD OF MANUFACTURING MAGNETIC RECORDING GMR READ BACK SENSOR (AS AMENDED)	Group Art Unit: 3729 Examiner: KIM, Paul D. Attorney Docket No. IBM1P044A/SJO920000124US2 Date: May 3, 2006

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

SUBSTITUTE APPEAL BRIEF (37 C.F.R. § 41.37)

This brief is in furtherance of the Notice of Appeal filed November 28, 2005, a substitute for the Appeal Brief filed January 25, 2006, and in response to the Notification of Non-Compliant Appeal Brief mailed on April 4, 2006. While appellant disagrees with the Examiner as to whether the alleged deficiencies exist in the original Appeal Brief, a Substitute Appeal Brief with appropriate edits is nevertheless submitted to expedite prosecution.

This brief is in furtherance of the Notice of Appeal, filed in this case on November 28, 2005.

The fees required under § 1.17, and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 41.37(c)(i)):

The final page of this brief bears the practitioner's signature.

I REAL PARTY IN INTEREST (37 C.F.R. § 41.37(c)(1)(i))

The real party in interest in this appeal is International Business Machines Corporation.

II RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c) (1)(ii))

With respect to other prior or pending appeals, interferences, or related judicial proceedings that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such prior or pending appeals, interferences, or related judicial proceedings known to applicant.

A Related Proceedings Appendix is appended hereto.

III STATUS OF CLAIMS (37 C.F.R. § 41.37(c) (1)(iii))

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-16

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims withdrawn from consideration: 9-16
2. Claims pending: 1-8
3. Claims allowed: 4-6
4. Claims rejected: 1-3, 7, 8

C. CLAIMS ON APPEAL

The claims on appeal are: 1-3, 7, 8

See additional status information in the Appendix of Claims.

IV STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(1)(iv))

As to the status of any amendment filed subsequent to final rejection, withdrawn claims 9-16 were canceled after final rejection. No other amendments were submitted. The amendment was entered by the Examiner after the final rejection for purposes of appeal. *See* section 7 of the Advisory Action mailed 10/31/2005.

V SUMMARY OF CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(1)(v))

With respect to a summary of independent claim 1 as currently pending, a method of simultaneously initializing the antiferromagnetic layers in a spin valve sensor is claimed. As shown in FIG. 5, the spin valve sensor has a free layer (505) and two bias tabs (510) for stabilization of the free layer. The bias tabs are comprised of a nonmagnetic layer (506), a ferromagnetic layer (507) antiparallel coupled to a portion of the free layer, and a first antiferromagnetic layer (508) adjacent to the ferromagnetic layer. The sensor additionally comprising a pinned layer (503) exchange coupled to a second antiferromagnetic layer (502). As discussed on p. 19 line 13 to p. 20, line 2 and p. 20, lines 10-22, and with continued reference to FIG. 5, the method includes placing the sensor in an external magnetic field (509), and adjusting a magnitude of the external magnetic field to cause the magnetization of the ferromagnetic layer (507) in the bias tabs to be substantially perpendicular to the direction of the external magnetic field. The sensor is heated above the blocking temperature of both of the antiferromagnetic layers (508, 502). The sensor is cooled below the blocking temperature of both of the antiferromagnetic layers in the presence of the external magnetic field. FIGS. 4A-D illustrate the spin flop effect induced by the external magnetic field (410) during initialization of the antiferromagnetic layers. FIG. 6 shows a spin valve sensor having the structure as recited in the claim.

With respect to a summary of independent claim 3 as currently pending, a method of simultaneously initializing the antiferromagnetic layers in a spin valve sensor is claimed. As shown in FIG. 5, the spin valve sensor has a free layer (505) and bias tabs (510) for stabilization of the free layer. The bias tabs are comprised of a nonmagnetic layer (506), a ferromagnetic layer (507) antiparallel coupled to a portion of the free layer, and a first antiferromagnetic layer (508) adjacent to the ferromagnetic layer. The sensor additionally comprising a pinned layer (503) exchange coupled to a second antiferromagnetic layer (502). As discussed on p. 19 line 13 to p. 20, line 2 and p. 20, lines 10-22, and with continued reference to FIG. 5, the method includes placing the sensor in an external magnetic field (509), and adjusting a magnitude of the magnetic field to cause the magnetization of the ferromagnetic layer (507) in the bias tabs to be

substantially perpendicular to the direction of the magnetic field. The sensor is heated above the blocking temperature of both of the antiferromagnetic layers (508, 502). The sensor is cooled below the blocking temperature of both of the antiferromagnetic layers in the presence of the magnetic field. As discussed on p. 21, lines 11-18, the direction of the external magnetic field during the single sequence of heating and cooling is not oriented in a direction parallel to an ABS. FIGS. 4A-D illustrate the spin flop effect induced by the external magnetic field (410) during initialization of the antiferromagnetic layers. FIG. 6 also shows a spin valve sensor having the structure as recited in the claim.

VI ISSUES TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

Following is a concise statement setting forth the corresponding ground of rejection.

Claims 1-3, 7 and 8 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,175,475.

VII ARGUMENT (37 C.F.R. § 41.37(c)(1)(vii))

The claims of the groups noted below do not stand or fall together. In the present section, appellant explains why the claims of each group are believed to be separately patentable.

Issue #1:

Issue # 1: Claims 1-3, 7 and 8 have been rejected under 35 U.S.C. 102(e) as being anticipated by Lin et al. (U.S. Pat. No. 6,175,475) [hereinafter "Lin"].

Group # 1: Claims 1, 2, 7, 8

Claim 1 requires a sensor with two bias tabs for stabilizing the free layer, as shown in FIGS. 5 and 6. Claims 2, 7 and 8 depend from claim 1, and therefore incorporate the limitations of claim 1. As shown in FIG. 5, each of the two bias tabs (510) includes an individually-defined ferromagnetic layer (507, 507) and an antiferromagnetic layer (508, 508). As shown in FIG. 6, each of the two bias tabs includes an individually-defined ferromagnetic layer (609, 609) and an individually-defined antiferromagnetic layer (610, 610). The ferromagnetic layers are each coupled antiparallel to at least a portion of the free layer (505, 607 in FIGS. 5 and 6, respectively).

In the final office action dated 09/09/2005, claims 1, 2, 7 and 8 were rejected under 35 USC 102(e) as being anticipated by Lin.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

In the instant case, the rejection relies on Lin's showing of a spacer layer (408), pinned layer (406), and antiferromagnetic layer (432) to show a biasing tab. As shown in Lin's FIG. 4, the spacer layer (408), ferromagnetic layer (406), and antiferromagnetic layer (432) together form a unitary structure that is coextensive with the free layer (410). In sharp contrast, claim 1 requires two bias tabs, examples of which are shown in FIGS. 5 and 6 of the present application. Thus, each and every element of claim 1 is not found in Lin, namely the claimed two bias tabs. Accordingly the rejection of claim 1 is improper under the rule of *Verdegaal Bros, supra.*

Additionally, the claimed bias tabs each require an antiparallel coupling with a portion of the free layer. As noted on p. 19, lines 3-5, the claimed antiparallel coupling provides bias stabilization of the free layer. In sharp contrast, antiparallel coupling between a ferromagnetic layer and free layer is not found in Lin. Note particularly Lin FIG. 4, which shows that the magnetic orientation (407) of the keeper layer (406) is oriented perpendicular to the magnetic orientation (412) of the free layer (410) after initialization. See also Lin col. 6, lines 13-16, which indicates that the pinned and keeper layer magnetizations are fixed antiparallel each other. Thus, each and every element of claim 1 is not found in Lin, namely the claimed antiparallel coupling between the ferromagnetic layers of the bias tabs and the free layer. Accordingly the rejection of claim 1 is improper under the rule of *Verdegaal Bros, supra.*

Moreover, the identical invention must be shown in as complete detail as contained in the claim. *Richardson v. Suzuki Motor Co.* 868 F.2d 1226, 1236, 9USPQ2d 1913, 1920 (Fed. Cir. 1989). Again, Lin's biasing structure is a unitary structure, and does not disclose two bias tabs nor antiparallel coupling between the ferromagnetic layers of the bias tabs and the free layer, as required by claim 1. Thus, Lin fails to show the identical invention as that claimed, and so reliance thereon for rejecting the claims is improper.

In the Advisory Action mailed 10/31/2005, the Examiner states that "[e]ven though there are two bias tabs recited in the claimed invention, they do not mean 'two individually define structures' as indicated by applicant." Applicant disagrees. Particularly, that given the broadest reasonable interpretation of the claims in light of the specification, and the plain meaning of "bias tabs", it is clear that the claimed "two bias tabs" refers to two individually-defined structures.

As required by MPEP Section 2111, the Examiner must give the claims their broadest reasonable interpretation in light of the specification. First, the claims themselves require two tabs. As described throughout the specification, e.g., with reference to FIGS. 5 and 6, the tabs are described in plural, denoting two individually-defined structures. See also p. 9, lines 5-9, which describes a pair of tabs (206) which stabilize the free layer. Referring to FIGS. 2, 5 and 6, the tabs are clearly shown as individually-defined structures. In sharp contrast, Lin does not show individually-defined structures having the claimed series of layers. Nor does Lin's structure function in the same way. For example, the present specification indicates that the bias tabs provide longitudinal magnetic stabilization for the free layer via antiparallel coupling with the free layer. *See, inter alia,* p. 19, lines 3-5 of the present application. In sharp contrast, the stabilization biasing of Lin's free layer is provided by a pinned layer and a keeper layer. If Lin's keeper layer were antiparallel to the free layer, the structure would have to be very carefully constructed so that the keeper layer would not pin the entire length of the free layer, thereby reducing or destroying its ability to react to external magnetic fields, e.g., from magnetic media. Therefore, it would not be reasonable to equate Lin`s unitary structure with the individually-defined bias tabs of the claimed invention, in light of the specification.

Thus, giving the claims their broadest reasonable interpretation in light of the specification, claim 1 requires two, individually-defined bias tabs. Because Lin fails to teach or even suggest multiple bias tabs, the rejection of claim 1 based on Lin is improper.

Applicant also argues that the plain meaning of "tabs" requires an interpretation thereof to mean multiple tabs. Per MPEP 2111.01, the terms of a claim must also be given their plain meaning unless defined in the specification. In other words, they must be read as they would be interpreted by those of ordinary skill in the art. The Examiner, being one skilled in the art, will appreciate that the word "tabs" (plural) in the structural sense (as claimed) is used in the field of magnetic recording to define structures positioned towards opposite ends of a layer or layers (e.g., free layer). An example of use of the word "tabs" in the art, presented as evidence of its meaning to those skilled in the art, is "lead overlay tabs." As is well known, lead overlay tabs

overlay ends of the sensor stack. They are not coextensive with the sensor stack; if they were, they would short and the sensor would be inoperative.

In the instant case, one skilled in the art reading the claims would interpret the element "two bias tabs" as referring to individually discernable structures, as opposed to a singular structure as recited in Lin. Accordingly, the Examiner's assertion that the claimed "two bias tabs" are not individual structures is incorrect under the plain meaning of "tabs." The resulting rejection is therefore improper under the rule of *Verdegaal Bros., supra*, namely that each and every limitation of the claimed invention must be disclosed in the prior art reference. Additionally, the identical invention is not shown in Lin in as complete detail as contained in the claim, as required by *Richardson, supra*. For these reasons, the rejection of claim 1 is improper.

Further, as the Examiner correctly points out in the continuation sheet of the Advisory Action mailed 10/31/2005, the claimed invention does not include a limitation that the biasing layers are coextensive with the free layer. Applicant agrees. Because the rejection relies on Lin's disclosure of biasing layers that are coextensive with the free layer, the rejection is improper as failing to disclose each and every element of the claimed invention.

Therefore, it is Applicant's contention that not all claimed elements are overtly disclosed in Lin. Applicant reiterates the arguments above that claim 1 requires two bias tabs and antiparallel coupling of the ferromagnetic layers of the bias tabs with at least a portion of the free layer, and Lin fails to disclose two bias tabs and the claimed antiparallel coupling. Accordingly, because all features of claim 1 are not present in Lin, it appears that the Examiner is asserting that the claimed features are inherently present. However, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). Rather, to establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is

not sufficient.' *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Applying these rules to the present application, the lack of any indication of how the claimed features not literally disclosed in Lin are inherently present renders the rejection of claim 1 inappropriate.

Because Lin fails to disclose or inherently contain each and every limitation required by claim 1 and its dependent claims 2, 7 and 8, and because the rejection fails to provide a basis for inclusion of inherent features in the rejection, the rejection of claims 1, 2, 7 and 8 is improper.

Group #2: Claim 3

Claim 3 requires a sensor with bias tabs (plural) for stabilizing the free layer, as shown in FIGS. 5 and 6. As shown in FIG. 5, each of the bias tabs (510) includes an individually-defined ferromagnetic layer (507, 507) and an antiferromagnetic layer (508, 508). As shown in FIG. 6, each of the bias tabs includes an individually-defined ferromagnetic layer (609, 609) and an individually-defined antiferromagnetic layer (610, 610). The ferromagnetic layers are each coupled antiparallel to at least a portion of the free layer (505, 607 in FIGS. 5 and 6, respectively).

In the final office action dated 09/09/2005, claim 3 was rejected under 35 USC 102(e) as being anticipated by Lin.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The elements

must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

In the instant case, the rejection relies on Lin's showing of a spacer layer (408), pinned layer (406), and antiferromagnetic layer (432) to show a biasing tab. As shown in Lin's FIG. 4, the spacer layer (408), ferromagnetic layer (406), and antiferromagnetic layer (432) together form a unitary structure that is coextensive with the free layer (410). In sharp contrast, claim 3 requires multiple bias tabs, examples of which are shown in FIGS. 5 and 6 of the present application. Thus, each and every element of claim 3 is not found in Lin, namely the claimed multiple bias tabs. Accordingly the rejection of claim 3 is improper.

Additionally, the claimed bias tabs each require an antiparallel coupling with a portion of the free layer. As noted on p. 19, lines 3-5, the claimed antiparallel coupling provides bias stabilization of the free layer. In sharp contrast, antiparallel coupling between a ferromagnetic layer and free layer is not found in Lin. Note particularly Lin FIG. 4, which shows that the magnetic orientation (407) of the keeper layer (406) is oriented perpendicular to the magnetic orientation (412) of the free layer (410) after initialization. See also Lin col. 6, lines 13-16, which indicates that the pinned and keeper layer magnetizations are fixed antiparallel each other. Thus, each and every element of claim 1 is not found in Lin, namely the claimed antiparallel coupling between the ferromagnetic layers of the bias tabs and the free layer. Accordingly the rejection of claim 1 is improper under the rule of *Verdegaal Bros, supra.*

Moreover, the identical invention must be shown in as complete detail as contained in the claim. *Richardson v. Suzuki Motor Co.* 868 F.2d 1226, 1236, 9USPQ2d 1913, 1920 (Fed. Cir. 1989). Again, Lin's biasing structure is a unitary structure, and does not disclose two bias tabs, nor antiparallel coupling between the ferromagnetic layers of the bias tabs and the free layer as required by claim 3. Thus, Lin fails to show the identical invention as that claimed, and so reliance thereon for rejecting the claims is improper.

In the Advisory Action mailed 10/31/2005, the Examiner states that "[e]ven though there are two bias tabs recited in the claimed invention, they do not mean 'two individually define structures'

as indicated by applicant." Applicant disagrees. Particularly, that given the broadest reasonable interpretation of the claims in light of the specification, and the plain meaning of "bias tabs", it is clear that the claimed "two bias tabs" refers to two individually-defined structures.

As required by MPEP Section 2111, the Examiner must give the claims their broadest reasonable interpretation in light of the specification. First, the claims themselves require multiple tabs. As described throughout the specification, e.g., with reference to FIGS. 5 and 6, the tabs are described in plural, denoting multiple individually-defined structures. See also p. 9, lines 5-9, which describes a pair of tabs (206) which stabilize the free layer. Referring to FIGS. 2, 5 and 6, the tabs are clearly shown as individually-defined structures. In sharp contrast, Lin does not show individually-defined structures having the claimed series of layers. Nor does Lin's structure function in the same way. For example, the present specification indicates that the bias tabs provide longitudinal magnetic stabilization for the free layer via antiparallel coupling with the free layer. *See, inter alia,* p. 19, lines 3-5 of the present application. In sharp contrast, the stabilization biasing of Lin's free layer is provided by a pinned layer and a keeper layer. If Lin's keeper layer were antiparallel to the free layer, the structure would have to be very carefully constructed so that the keeper layer would not pin the entire length of the free layer, thereby reducing or destroying its ability to react to external magnetic fields, e.g., from magnetic media. Therefore, it would not be reasonable to equate Lin's unitary structure with the individually-defined bias tabs of the claimed invention, in light of the specification.

Thus, giving the claims their broadest reasonable interpretation in light of the specification, claim 3 requires multiple, individually-defined bias tabs. Because Lin fails to teach or even suggest multiple bias tabs, the rejection of claim 3 based on Lin is improper.

Applicant also argues that the plain meaning of "tabs" requires an interpretation thereof to mean multiple tabs. Per MPEP 2111.01, the terms of a claim must also be given their plain meaning unless defined in the specification. In other words, they must be read as they would be interpreted by those of ordinary skill in the art. The Examiner, being one skilled in the art, will appreciate that the word "tabs" (plural) in the structural sense (as claimed) is used in the field of magnetic recording to define structures positioned towards opposite ends of a layer or layers

(e.g., free layer). An example of use of the word "tabs" in the art, presented as evidence of its meaning to those skilled in the art, is "lead overlay tabs." As is well known, lead overlay tabs overlay ends of the sensor stack. They are not coextensive with the sensor stack; if they were, they would short and the sensor would be inoperative.

In the instant case, one skilled in the art reading the claims would interpret the element "two bias tabs" as referring to individually discernable structures, as opposed to a singular structure as recited in Lin. Accordingly, the Examiner's assertion that the claimed "two bias tabs" are not individual structures is incorrect under the plain meaning of "tabs." The resulting rejection is therefore improper under the rule of *Verdegaal Bros., supra*, namely that each and every limitation of the claimed invention must be disclosed in the prior art reference. Additionally, the identical invention is not shown in Lin in as complete detail as contained in the claim, as required by *Richardson, supra*. For these reasons, the rejection of claim 1 is improper.

Further, as the Examiner correctly points out in the continuation sheet of the Advisory Action mailed 10/31/2005, the claimed invention does not include a limitation that the biasing layers are coextensive with the free layer. Applicant agrees. Because the rejection relies on Lin's disclosure of biasing layers that are coextensive with the free layer, the rejection is improper as failing to disclose each and every element of the claimed invention.

Therefore, it is Applicant's contention that not all claimed elements are overtly disclosed in Lin. Applicant reiterates the arguments above that claim 3 requires multiple bias tabs and antiparallel coupling of the ferromagnetic layers of the bias tabs with at least a portion of the free layer, and Lin fails to disclose multiple bias tabs and the claimed antiparallel coupling. Accordingly, because all features of claim 3 are not present in Lin, it appears that the Examiner is asserting that the claimed features are inherently present. However, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). Rather, to establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by

persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Applying these rules to the present application, the lack of any indication of how the claimed features not literally disclosed in Lin are inherently present renders the rejection of claim 3 inappropriate.

Because Lin fails to disclose or inherently contain each and every limitation required by claim 3, and because the rejection fails to provide a basis for inclusion of inherent features in the rejection, the rejection of claim 3 is improper.

VIII APPENDIX OF CLAIMS (37 C.F.R. § 41.37(c)(1)(viii))

The text of the claims involved in the appeal (along with associated status information) is set forth below:

1. (PREVIOUSLY PRESENTED) A method of simultaneously initializing the antiferromagnetic layers in a spin valve sensor which has a free layer, two bias tabs for stabilization of said free layer, said bias tabs being comprised of a nonmagnetic layer, a ferromagnetic layer antiparallel coupled to a portion of said free layer, and a first antiferromagnetic layer adjacent to said ferromagnetic layer, said sensor additionally comprising a pinned layer exchange coupled to a second antiferromagnetic layer, comprising:

placing the sensor in an external magnetic field;

adjusting a magnitude of said external magnetic field to cause the magnetization of said ferromagnetic layer in said bias tabs to be substantially perpendicular to the direction of said external magnetic field;

heating the sensor above the blocking temperature of both of the antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both of the antiferromagnetic layers in the presence of said external magnetic field.

2. (PREVIOUSLY PRESENTED) The method as recited in claim 1, wherein the heating and cooling are performed in a single sequence.

3. (PREVIOUSLY PRESENTED) A method of simultaneously initializing the antiferromagnetic layers in a spin valve sensor which has a free layer, bias tabs for stabilization of said free layer, said bias tabs being comprised of a nonmagnetic layer, a ferromagnetic layer antiparallel coupled to a portion of said free layer, and a first antiferromagnetic layer adjacent to

said ferromagnetic layer, said sensor additionally comprising a pinned layer exchange coupled to a second antiferromagnetic layer, comprising:

placing the sensor in an external magnetic field;

adjusting a magnitude of said magnetic field to cause the magnetization of said ferromagnetic layer in said bias tabs to be substantially perpendicular to the direction of said magnetic field;

heating the sensor above the blocking temperature of both of the antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both of the antiferromagnetic layers in the presence of said magnetic field,

wherein a direction of the magnetic field during the single sequence of heating and cooling is not oriented in a direction parallel to an ABS.

4. (PREVIOUSLY PRESENTED) A method of simultaneously initializing the antiferromagnetic layers in a spin valve sensor which has a free layer, bias tabs for stabilization of said free layer, said bias tabs being comprised of a nonmagnetic layer, a ferromagnetic layer antiparallel coupled to a portion of said free layer, and a first antiferromagnetic layer adjacent to said ferromagnetic layer, said sensor additionally comprising a pinned layer exchange coupled to a second antiferromagnetic layer, comprising:

placing the sensor in an external magnetic field;

adjusting a magnitude of said magnetic field to cause the magnetization of said ferromagnetic layer in said bias tabs to be substantially perpendicular to the direction of said magnetic field;

heating the sensor above the blocking temperature of both of the antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both of the antiferromagnetic layers in the presence of said magnetic field,

wherein the magnetic field is varied from a start value to an optimum value during the single sequence of heating and cooling in the magnetic field.

5. (PREVIOUSLY PRESENTED) The method as recited in claim 4, wherein the magnetic field is increased above the optimum value and then reduced to the optimum value during the single sequence of heating and cooling in the magnetic field.

6. (PREVIOUSLY PRESENTED) The method as recited in claim 4, wherein the magnetic field is increased from a value below the optimum value to the optimum value during the single sequence of heating and cooling in the magnetic field.

7. (PREVIOUSLY PRESENTED) The method as recited in claim 1, wherein the second antiferromagnetic layer and the free layer have substantially the same width.

8. (PREVIOUSLY PRESENTED) The method as recited in claim 1, wherein the first and second antiferromagnetic layers have substantially the same composition.

9-16. (CANCELED)

IX EVIDENCE APPENDIX (37 C.F.R. § 41.37(c)(1)(ix))

There is no such evidence.

X RELATED PROCEEDINGS APPENDIX (37 C.F.R. § 41.37(c)(1)(x))

There is no such related proceeding.

In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 971-2573. For payment of any additional fees due in connection with the filing of this paper, the Commissioner is authorized to charge such fees to Deposit Account No. 09-0466 (Order No. SJO9-2000-0124US2).

Respectfully submitted,

By: May 3, 2006 Date: /Dominic M. Kotab/

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